REMARKS

Upon entry of this amendment, claims 1, 5 and 7 are all the claims pending in the application. Non-elected claims 2-4, 6 and 8-12 have been canceled by this amendment.

Applicants note that a number of editorial amendments have been made to the specification for grammatical and general readability purposes. No new matter has been added.

I. Claim Rejections under 35 U.S.C. § 112, second paragraph

Claims 1, 5 and 7 have been rejected under 35 U.S.C. § 112, second paragraph as being indefinite. In particular, Applicants note that the Examiner has indicated that the "ratio" recited in claims 1, 5 and 7 is unclear. By this amendment, Applicants note that claims 1, 5 and 7 have been amended so as to clarify such a feature.

In particular, Applicants note that claims 1, 5 and 7 have been amended herein in accordance with the Examiner's suggestion so as to include language directly from the specification. For example, Applicants note that claim 1 has been amended to recite that the ratio is between a total area of lower base portions of said hollow protrusions and an area of liner portions of the thermoplastic resin sheets, and that claims 5 and 7 have been amended to recite that the ratio is between a total area of lower base portions of the pins and a surface area of said emboss rollers on which the pins are not formed.

In view of the foregoing, Applicants submit that when read in light of the specification, one of ordinary skill in the art would readily be able to ascertain the meaning and scope of claims 1, 5 and 7, as amended herein. Accordingly, Applicants submit that claims 1, 5 and 7 satisfy the

requirements of 35 U.S.C. 112, second paragraph, and therefore, kindly request that the Examiner reconsider and withdraw the above-noted rejection.

II. Claim Rejections under 35 U.S.C. § 102

Claims 1, 5 and 7 have been rejected under 35 U.S.C. § 102(b) as being anticipated by JP 2000-326430 (hereafter "the JP '430 reference").

Regarding claim 1, Applicants note that this claim has been amended herein to recite that a ratio between a total area of lower base portions of said hollow protrusions and an area of liner portions of the thermoplastic resin sheets is greater than or equal to 0.3 and less than 0.6, wherein the lower base portions of said hollow protrusions are open portions of said hollow protrusions which are opposite to the end faces of the hollow protrusions, and the liner portions of the thermoplastic resin sheets are portions of the thermoplastic resin sheets in which the hollow protrusions are not formed, and wherein a rising angle of a side face of each of said hollow protrusions in a vertical plane including a central axis of the hollow protrusion is in a range from 50 degrees to 70 degrees.

Regarding claims 5 and 7, Applicants note that these claims have been amended herein to recite that a ratio between a total area of lower base portions of the pins and a surface area of said emboss rollers on which the pins are not formed, is greater than or equal to 0.3 and less than 0.6; and that a rising angle of a side face of each of the pins in a vertical plane including a central axis of the pin is in a range from 50 degrees to 70 degrees.

Applicants respectfully submit that the JP '430 reference does not disclose, suggest or otherwise render obvious the above-noted features recited in claims 1, 5 and 7.

In particular, with respect to the JP '430 reference, Applicants note in the Office Action, the Examiner indicated that the ratio recited in claims 1, 5 and 7 "would be met since it is unclear what this ratio actually is" (see Office Action at page 3). In this regard, as discussed above, claims 1, 5 and 7 have been amended so as to address the rejection under 35 U.S.C. 112, second paragraph, such that the ratio defined therein would be understood by one of ordinary skill in the art.

To this end, Applicants note that while the JP '430 reference discloses a plurality of hollow protrusions that are projected in each of two thermoplastic resin sheets with the hollow protrusions facing each other, that the JP '430 reference does not include any description whatsoever regarding the above-noted features recited in amended claims 1, 5 and 7. Accordingly, Applicants submit that claims 1, 5 and 7 are patentable over the JP '430 reference, an indication of which is kindly requested.

III. Claim Rejections under 35 U.S.C. § 103(a)

Claims 1, 5 and 7 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Clark (US 6,004,652).

Regarding claim 1, as noted above, this claim has been amended to recite that a ratio between a total area of lower base portions of said hollow protrusions and an area of liner portions of the thermoplastic resin sheets is greater than or equal to 0.3 and less than 0.6, wherein the lower base portions of said hollow protrusions

which are opposite to the end faces of the hollow protrusions, and the liner portions of the thermoplastic resin sheets are portions of the thermoplastic resin sheets in which the hollow protrusions are not formed, and wherein a rising angle of a side face of each of said hollow protrusions in a vertical plane including a central axis of the hollow protrusion is in a range from 50 degrees to 70 degrees.

Applicants respectfully submit that Clark does not disclose, suggest or otherwise render obvious the above-noted combination of features.

With respect to Clark, Applicants note that this reference discloses a dimple panel that includes dimples extending from one or both sides of a dimple layer and at least one reinforcing layer attached to the dimple layer so as to form one or move cavities between the reinforcing layer and the dimple layer (see col. 3, lines 63-67). For example, as shown in Fig. 13B of Clark, a single-sided dimple layer 1 is stacked above and connected to a double-sided dimple layer 11, so as to create a cavity 63 between the layers (see col. 8, lines 23-34).

In Clark, as noted by the Examiner in the Office Action, it is disclosed that the "dimples can have varying sizes, geometries, heights, profiles, dimensions, spacings, densities, and/or arrangement on the dimple layer to provide a wide variety of end products" (see col. 4, lines 4-7). To the extent that the Examiner takes the position that it would have been obvious, based on the above-noted disclosure, to modify the dimple panel of Clark so as to have a configuration as defined by the features recited in amended claim 1, Applicants respectfully disagree.

In particular, Applicants respectfully that such a position would be nothing more than a blanket statement that it would have been obvious to modify the dimple panel of Clark so as to

have any possible configuration, or in other words, that it would have been an obvious matter of design choice to modify the dimple panel of Clark in any possible manner. To the extent that the Examiner takes such a position, Applicants respectfully disagree, and submit that the specific configuration defined by the features set forth in claim 1 would not have been a matter of mere design choice.

For example, with respect to the above-noted features recited in claim 1 drawn to the configuration of the hollow structure plate, Applicants note that the specification clearly explains that by providing such a configuration, it is possible to obtain a hollow structure plate having good bending characteristics (e.g., see Table 1 on page 16 of the specification, and the disclosure on page 16 of the specification at lines 9-17). Accordingly, Applicants submit that the above-noted combination of features recited in claim 1 would not be a matter of mere design choice to one of ordinary skill in the art.

In this regard, Applicants note that the Federal Circuit has held that a claimed invention should not be rejected as a mere "design choice" when the Applicant presents evidence of the technical advantages of the Applicant's structure. *See In re Chu*, 66 F.3d 292, 36 USPQ2d 1089 (Fed. Cir. 1995). Here, as described above, Applicant's disclosure identifies the operational benefits obtained by utilizing a hollow structure plate having the above-noted configuration (e.g., see Table 1 on page 16 of the specification, and the disclosure on page 16 of the specification at lines 9-17).

Therefore, because the features recited in claim 1 confer technical advantages over the prior art, Applicants respectfully submit that such features would not have been a simple matter

of design choice.

In view of the foregoing, Applicants respectfully submit that Clark does not disclose, suggest or otherwise render obvious the above-noted features recited in amended claim 1 which set forth that a ratio between a total area of lower base portions of said hollow protrusions and an area of liner portions of the thermoplastic resin sheets is greater than or equal to 0.3 and less than 0.6, wherein the lower base portions of said hollow protrusions are open portions of said hollow protrusions which are opposite to the end faces of the hollow protrusions, and the liner portions of the thermoplastic resin sheets are portions of the thermoplastic resin sheets in which the hollow protrusions are not formed, and wherein a rising angle of a side face of each of said hollow protrusions in a vertical plane including a central axis of the hollow protrusion is in a range from 50 degrees to 70 degrees.

Accordingly, Applicants submit that claim 1 is patentable over Clark, an indication of which is kindly requested.

Regarding claims 5 and 7, Applicants note that these claims have been amended so as to recite that a ratio between a total area of lower base portions of the pins and a surface area of said emboss rollers on which the pins are not formed, is greater than or equal to 0.3 and less than 0.6; and wherein a rising angle of a side face of each of the pins in a vertical plane including a central axis of the pin is in a range from 50 degrees to 70 degrees.

For at least similar reasons as discussed above with respect to claim 1, Applicants respectfully submit that Clark does not disclose, suggest or otherwise render obvious the above-noted features recited in claims 5 and 7. Accordingly, Applicants submit that claims 5 and 7 are

patentable over Clark, an indication of which is kindly requested.

In addition, regarding claim 5, Applicants note that this claim has been amended to recite the features of introducing, using a pair of sheet-introduction plates, two thermoplastic resin sheets into a pressure-reduced chamber; and thermally fusing, using a heater that is disposed between the pair of sheet-introduction plates, the end faces of said hollow protrusions in a position of a contact point of the emboss rollers continuously; wherein the pair of sheet-introduction plates are inclined in a direction toward the contact point.

Regarding the above-noted features, Applicants note that while Clark discloses the use of dimple panel that includes dimples extending from one or both sides of a dimple layer and at least one reinforcing layer attached to the dimple layer so as to form one or move cavities between the reinforcing layer and the dimple layer (see col. 3, lines 63-67), that Clark does not disclose, suggest or otherwise render obvious the above-noted features recited in amended claim 5 of introducing, using a pair of sheet-introduction plates, two thermoplastic resin sheets into a pressure-reduced chamber; and thermally fusing, using a heater that is disposed between the pair of sheet-introduction plates, the end faces of said hollow protrusions in a position of a contact point of the emboss rollers continuously; wherein the pair of sheet-introduction plates are inclined in a direction toward the contact point.

Accordingly, Applicants submit that claim 5 is patentable over Clark, an indication of which is kindly requested.

Further, regarding claim 7, Applicants note that this claim has been amended in a similar manner as claim 5 so as to recite the features of a pair of sheet-introduction plates for introducing

the two thermoplastic resin sheets into the pressure-reduced chamber, the pair of sheet-introduction plates being inclined in a direction toward the contact point; and a heater for heating that is arranged at said front opening portion of said pressure-reduced chamber between the pair of sheet-introduction plates.

Regarding the above-noted features, Applicants note that while Clark discloses the use of dimple panel that includes dimples extending from one or both sides of a dimple layer and at least one reinforcing layer attached to the dimple layer so as to form one or move cavities between the reinforcing layer and the dimple layer (see col. 3, lines 63-67), that Clark does not disclose, suggest or otherwise render obvious the above-noted features recited in amended claim 7 of a pair of sheet-introduction plates for introducing the two thermoplastic resin sheets into the pressure-reduced chamber, the pair of sheet-introduction plates being inclined in a direction toward the contact point; and a heater for heating that is arranged at said front opening portion of said pressure-reduced chamber between the pair of sheet-introduction plates.

Accordingly, Applicants submit that claim 7 is patentable over Clark, an indication of which is kindly requested.

IV. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited.

If any points remain in issue which the Examiner feels may best be resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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